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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/825,636	04/04/2001	Scott D. Thompson	PP00-4	3822

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EXAMINER	
MILLER, BRANDON J	
ART UNIT	PAPER NUMBER
2617	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/22/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/825,636	THOMPSON, SCOTT D.	
	Examiner	Art Unit	
	Brandon J. Miller	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-29,31-36 and 40-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-29,31-36 and 40-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/27/2006 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 2-3, 8-13, 19, 21-24, 26, 31-34, 40-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Carey et al. (US 2002/0068612 A1).

Regarding claim 2 Carey teaches wherein there is a plurality of remote stations (see paragraph [0073] and Fig. 4).

Regarding claim 3 Carey teaches a beam former linked between the hub and the multi-beam antenna (see paragraphs [0092] & [0093]).

Regarding claim 8 Carey teaches a wireless network system comprising a communication hub linked to a source (see paragraph [0047] & FIG. 1, data network relates to source). Carey

teaches at least one remote station which communicates with the communication hub in order to exchange information with the source, each of the at least one remote station including a directive antenna (see paragraph [0073] & FIG. 4). Carey teaches a multi-beam antenna connected to the communication hub to allow the exchange of information between the communication hub and each of the at least one remote station, the multi-beam antenna producing a plurality of beams for such exchange of information, wherein each beam of the plurality of beams is assigned to one of the at least one remote station (see paragraphs [0074] & [0093] and FIG. 4, each beam of the plurality of beams is assigned to one sector containing a remote station, this relates to each beam of the plurality of beams is assigned to one of the at least one remote stations). Carey teaches an Ethernet switch within and part of the hub which is linked between the source and the multi-beam antenna (see paragraphs [0061] and FIGS. 1C & 4). Carey teaches providing automated switching capability between the source and each beam of the plurality of beams to allow automated selection of a beam of the plurality of beams by one of the at least one remote station addresses (see paragraph [0062]).

Regarding claim 9 Carey teaches at least one radio transceiver as part of the hub which is linked between the source and the multi-beam antenna (see paragraph [0065] and FIGS. 1C & 4).

Regarding claim 10 Carey teaches a switching matrix as part of a hub which is linked between one of the at least one radio transceiver and multi-beam antenna and a switching matrix allowing service of more than one of the at least one remote station by one radio transceiver (see paragraph [0061] and FIGS. 1C & 4).

Regarding claim 11 Carey teaches a Ethernet switch as part of the hub which is linked between the source and the at least one radio transceiver (see paragraph [0061] and FIGS. 1C & 4).

Regarding claim 12 Carey teaches a device as recited in claim 9 and is rejected given the same reasoning as above.

Regarding claim 13 Carey teaches a device as recited in claim 11 and is rejected given the same reasoning as above.

Regarding claim 19 Carey teaches wherein the multi-beam antenna includes radiating elements on a circuit board (see paragraph [0092], multiple layers of dielectric materials having different dielectric constants relates to radiating elements on a circuit board).

Regarding claim 21 Carey teaches wherein the source is linked to the by the multi-beam antenna (see paragraph [0062]).

Regarding claim 22 Carey teaches at least one radio transceiver as part of the hub which is linked between a signal received by the multi-beam antenna from the source and a port of the multi-beam antenna in which the signal is directed to so that the signal may be transmitted to one of the at least one remote station (see paragraphs [0065] & [0074] and FIGS. 1C & 4).

Regarding claim 23 Carey teaches a device as recited in claim 10 and is rejected given the same reasoning as above.

Regarding claim 24 Carey teaches adjacent beams of a plurality of beams are of a different frequency (see paragraph [0079]).

Regarding claim 26 Carey teaches at least two-non-adjacent beams of the plurality of beams are of a same frequency (see paragraph [0079]).

Regarding claim 31 Carey teaches a wireless network system comprising a communication hub linked to a source (see paragraph [0047] & FIG. 1, data network relates to source). Carey teaches at least one remote station which communicates with the communication hub in order to exchange information with the source, each of the at least one remote station including a directive antenna (see paragraph [0073] & FIG. 4). Carey teaches a multi-beam antenna connected to the communication hub to allow the exchange of information between the communication hub and each of the at least one remote station, the multi-beam antenna producing a plurality of beams for such exchange of information, wherein each beam of the plurality of beams is assigned to one of the at least one remote station (see paragraphs [0074] & [0093] and FIG. 4, each beam of the plurality of beams is assigned to one sector containing a remote station, this relates to each beam of the plurality of beams is assigned to one of the at least one remote stations). Carey teaches a beam former linked between the hub and the multi-beam antenna (see paragraph [0092] & [0093]). Carey teaches an Ethernet switch within and part of the hub which is linked between the source and the multi-beam antenna (see paragraphs [0061] and FIGS. 1C & 4). Carey teaches providing automated switching capability between the source and each beam of the plurality of beams to allow automated selection of a beam of the plurality of beams by one of the at least one remote station addresses (see paragraph [0062]).

Regarding claim 32 Carey teaches at least one radio transceiver as part of the hub and linked between the Ethernet switch and the beam former (see paragraph [0065] and FIGS. 1C & 4).

Regarding claim 33 Carey teaches a device as recited in claim 2 and is rejected given the same reasoning as above.

Regarding claim 34 Carey teaches a device as recited in claim 2 and is rejected given the same reasoning as above.

Regarding claim 40 Carey teaches a device as recited in claim 3 and is rejected given the same reasoning as above.

Regarding claim 41 Carey teaches a method of a source communicating with a plurality of remote stations using a wireless network system comprising a communication hub linked to a source (see paragraph [0047] & FIG. 1, data network relates to source). Carey teaches at least one remote station which communicates with the communication hub in order to exchange information with the source, each of the at least one remote station including a directive antenna (see paragraph [0073] & FIG. 4). Carey teaches a multi-beam antenna connected to the communication hub to allow the exchange of information between the communication hub and each of the at least one remote station, the multi-beam antenna producing a plurality of beams for such exchange of information, linking each of the at least one remote station to one of plurality of beams (see paragraphs [0074] & [0093] and FIG. 4, each beam of the plurality of beams is linked to one sector containing a remote station, this relates to each beam of the plurality of beams is linked to one of the at least one remote stations). Carey teaches coordinating sending and receiving of the information between the source and remote station by way of the plurality of beams using the hub (see paragraph [0074]). Carey teaches an Ethernet switch within and part of the hub which is linked between the source and the multi-beam antenna (see paragraphs [0061] and FIGS. 1C & 4). Carey teaches providing automated switching capability between the source and each beam of the plurality of beams to allow automated selection of a beam of the plurality of beams by one of the at least one remote station addresses (see paragraph [0062]).

Regarding claim 42 Zendle, Carnegie, and Dent teach a device as recited in claim 32 and is rejected given the same reasoning as above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4-7, 15-18, 20, 25, and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carey et al. (US 2002/0068612 A1) and Dent (US 5,812,947).

Regarding claim 4 Carey teach a device as recited in claim 3 except for a beam former that includes the use of an NxN hybrid coupling matrix having N input ports and N radiating elements and wherein a value N may be any radix 2 number. Dent does teach applying beam-forming to geostationary systems that illuminate for fixed stations (see col. 51, lines 1-9). Dent does teach a beam that includes the use of an NxN hybrid coupling matrix having N input ports and N radiating elements and wherein a value N may be any radix 2 number (see col. 9, lines 18-23). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device adapt to include a beam former that includes the use of an NxN hybrid coupling matrix having N input ports and N radiating elements and wherein a value N may be any radix 2 number because this would allow for improved sector distribution of a wireless system that emits radiation patterns in a sectored coverage area.

Regarding claim 5 Dent teaches a beam former that includes fixed microwave frequency phase delays, microwave frequency couplers, and microwave radiators (see col. 7, lines 56-60 and col. 51, lines 1-9).

Regarding claim 6 Carey teaches a device as recited in claim 3 except for a beam former that is in the form of stripline etched patterns on at least one circuit board. Carey does teach wherein the multi-beam antenna includes radiating elements on a circuit board (see paragraph [0092], multiple layers of dielectric materials having different dielectric constants relates to radiating elements on a circuit board). Dent teaches a stripline directional coupler network (see col. 12, lines 13-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device adapt to include a beam former that is in the form of stripline etched patterns on at least one circuit board because this would allow for improved sector distribution of a wireless system that emits radiation patterns in a sectored coverage area.

Regarding claim 7 Carey teaches a device as recited in claim 3 except for a beam former that is in the form of microstrip etched patterns on at least one circuit board. Carey does teach wherein the multi-beam antenna includes radiating elements on a circuit board (see paragraph [0092], multiple layers of dielectric materials having different dielectric constants relates to radiating elements on a circuit board). Dent teaches a stripline directional coupler network (see col. 12, lines 13-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device adapt to include a beam former that is in the form of microstrip etched patterns on at least one circuit board because this would allow for more efficient configurations of the antenna facilities in a wireless network system.

Regarding claim 15 Dent teaches including a received signal strength indicator device at the hub to monitor received signal strength of the beams and adapt power of the beams produced by the multi-beam antenna (see col. col. 3, lines 1-5).

Regarding claim 16 Dent teaches a controller for frequency coordination power control and data packet transmission (see col. 23, lines 61-67 and col. 24, lines 1-3).

Regarding claim 17 Dent teaches including a received signal strength indicator device at the at least one remote station to monitor received signal strength of the beams and adapt power of the beams produced by the multi-beam antenna (see col. 41, lines 42-49).

Regarding claim 18 Dent teaches a controller at the at least one remote station for frequency coordination, power control, and data packet transmission (see col. 13, lines 45-49, col. 18, lines 18-21, and col. 41, lines 42-49).

Regarding claim 20 Carey teach a device as recited in claim 19 except for a multi-beam antenna that is of microstrip construction. Carey does teach a multi-beam antenna (see paragraph [0073]). Dent teaches a stripline directional coupler network (see col. 12, lines 13-15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device adapt to include a multi-beam antenna that is of microstrip construction because this would allow for improved sector distribution of a wireless system that emits radiation patterns in a sectored coverage area.

Regarding claim 25 Dent teaches at least one remote station that is within a 3 dB beamwidth of one of a plurality of beams (see col. 45, lines 63-66).

Regarding claim 27 Dent teaches at least two non-adjacent beams and remote stations linked to at least two non-adjacent beams include power adjustment such that sidelobes

associated with communication of one of the non-adjacent beams is minimized so as to minimize interference with the other of the non-adjacent beams which are of the same frequency (see col. 45, lines 39-51).

Regarding claim 28 Dent teaches at least two remote stations that utilize a same beam of the plurality of beams for communication that have a different polarization of the directive antenna at each of the remote stations (see col. 12, lines 66-67 and col. 13, lines 1-8).

Claims 14, 35-36, and 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carey et al. (US 2002/0068212 A1) and Honcharenko et al. (US 6,349,217 B1).

Regarding claim 14 Carey teaches a device as recited in claim 8 except for more than one multi-beam antenna and wherein each of the multi-beam antennas including a primary service sector which forms an area of the plurality of beams of each of the multi-beam antennas. Honcharenko teaches more than one multi-beam antenna and wherein each of the multi-beam antennas including a primary service sector which forms an area of the plurality of beams of each of the multi-beam antennas (see col. 2, lines 54-65 and FIG. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device in Carey adapt to include more than one multi-beam antenna and wherein each of the multi-beam antennas including a primary service sector which forms an area of the plurality of beams of each of the multi-beam antennas because it is typical for a coverage area such as the one in Carey to apart of a larger system and the combination would allow for improved sector distribution of a wireless system that emits radiation patterns in a sectored coverage area.

Regarding claim 35 Carey and Honcharenko teach a device as recited in claim 14 and is rejected given the same reasoning as above.

Regarding claim 43 Carey and Honcharenko teach a device as recited in claim 14 and is rejected given the same reasoning as above.

Regarding claim 44 Carey and Honcharenko teach a device as recited in claim 14 and is rejected given the same reasoning as above.

Claim 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carey et al. (US 2002/0068612 A1) in view of Kuntman et al. (US 6,313,783 B1).

Regarding claim 29 Carey teaches a device as recited in claim 8 except for a multi-beam antenna that is a circuit board of radiating elements covered by a radome. Kuntman teaches an antenna that is a circuit board of radiating elements covered by a radome (see col. 20, lines 58-63). It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the device adapt to include a multi-beam antenna that is a circuit board of radiating elements covered by a radome because this would allow for improved sector distribution of a wireless system that emits radiation patterns in a sectored coverage area.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8, 31, and 41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "said at least one remote station address" in line 15. There is insufficient antecedent basis for this limitation in the claim.

Claim 31 recites the limitation "said at least one remote station address" in line 16. There is insufficient antecedent basis for this limitation in the claim.

Claim 41 recites the limitation "said at least one remote station address" in line 15. There is insufficient antecedent basis for this limitation in the claim.

Claim 41 recites the limitation "said beam former" in line 13. There is insufficient antecedent basis for this limitation in the claim.

Response to Arguments

Applicant's arguments with respect to claims 2-29, 31-36, and 40-44 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Weiss et al. Patent Number: US 5,953,639 discloses a multi-beam encoding system for two-way paging.

Jacomb-Hood et al. Patent Number: US 6,522,643 B1 discloses an apparatus, method, and computer program products for cell-hopping satellite communications.

Judd et al. Pub. No.: US 2004/0110469 A1 discloses repeaters for wireless communication systems.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brandon J. Miller whose telephone number is 571-272-7869. The examiner can normally be reached on Mon.-Fri. 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, George Eng can be reached on 571-272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

February 16, 2007

GEORGE ENG
SUPERVISORY PATENT EXAMINER